DARPA-BAA-14-17
Distributed Battle Management (DBM)
Questions and Answers
10 March 2014

The DBM Industry Day presentations (program overview, STO overview, and SIMAF overview) and the list of attendees are posted on the DARPA website at http://www.darpa.mil/Our_Work/STO/Programs/Distributed_Battle_Management_%28DBM%29.aspx.

BAA Questions

What does the $10.6M cover?

The $10.6 M is the amount of funding available for TA1 and TA2 performers for Phase 1 and the 3 month option period. The Government anticipates funding several efforts in each technical area and has not pre-determined the number or size of awards in each area - this will depend on the quality and scope of the individual proposals.

If we plan to submit a 2 thrust proposal for TA2, can we submit 2 separate abstracts, or should we limit ourselves to 5 pages for a 2 thrust proposal?

You may submit two separate abstracts even if you only plan to submit a single, two-thrust proposal.

Should proposals address Phase 2?

No.

Are you interested in any new sensor, Positioning, Navigation, and Timing (PNT), and/or communications technology as part of this BAA?

No.

How will you evaluate scientific/technical merit for the proposals if DBM metrics/goals are TBD during Phase 1?

As stated in the BAA, proposers are asked to proffer their own metrics. Scientific and technical merit will be evaluated in accordance with the evaluation criteria set forth in Section 5 of the BAA.

Can we use other compression and encryption tools or is WinZip/PKZip mandatory?

Any Winzip-compatible compression utility (PKZip, 7Zip, etc.) is acceptable, as long as the 256-bit key requirement is met.

Operational Questions

What communications links are in scope or should be assumed?

All types of relevant communications links are in scope (to include Link-16 and TTNT). It should be assumed that comm links are representative of current and near-future capabilities. During Phase 1, DBM will not be working with specific comm links, but will experiment with the connectivity and throughput consequences of lost or degraded comms, such as low bandwidths, intermittent connectivity, and reduced power levels.

Please elaborate on what you mean by "realistic number of total assets."

This can range from a few to dozens depending on the scenario. A pilot may need to take over battle command of a handful of unmanned aerial systems (UAS) that have lost link to their ground control station (GCS) or an airborne battle manager may need to take over an entire theater of air missions.

Should solutions be developed for specific platforms, weapons, or sensors, or is it preferable to develop solutions that are agnostic.

For Phase 1, agnostic solutions are preferred.

Do you have a list of existing UASs in mind as the platforms to be considered for use in the concept and do you have autonomy models for them?

We consider any platforms in the current operational inventory and any projected for the near future as relevant. The required autonomy models will be determined by the specific scenarios and challenge problems developed for the DBM program.

Your vignettes appear to assume air superiority, is that true?

No. The DBM program postulates a peer contested environment. Air superiority is not assumed.

What is the assumed logistical support for the distributed assets, such as airborne fueling?

Although logistical support is important, the scope of the DBM program does not include refueling.

Will DARPA provide an Open Mission Systems (OMS) data package?

No. DARPA does not intend to provide an OMS data package. You may request this as GFI, but there is no guarantee that they will be made available.

TA1 – System Integration Questions

What type of flight demo is expected, laptops and equipment in the back of an aircraft or software fully integrated into a mission computer? Does the Integrator have to own the aircraft to support the live fly experiments?

The flight demo could be either surrogates with loose integration or actual platforms with software fully integrated. The Integrator does not have to own the aircraft and can use general aviation aircraft as surrogates for military aircraft.

TA1 is defining interfaces in Phase 1; do TA2 performers need to build to them? Do you expect solutions to conform to any existing standards or interfaces?

Not in Phase 1, but yes in Phase 2. TA1 performers must survey the current and near future environment to determine the best standards and interfaces to use to support and enable transition. TA2 will work jointly with the SIMAF team to define interfaces for their technology.

TA2 – Technology Development Questions

Does a proposal for a Technical Area need to provide a comprehensive solution or can it provide a partial solution? Is there a smallest unit of capability necessary to be responsive? Should TA2 developers partner with others to increase the scope of their effort? In other words, will single company proposers be at a disadvantage?

Partial solutions are acceptable. Without a complete set of requirements and component design, there is no way to designate or even understand a "smallest unit". If you have a unique algorithm that solves a critical subset of a thrust, you are encouraged to submit a proposal. There is no disadvantage to single company proposals or single thrust proposals and no advantage to teams that propose to multiple thrusts. Note that even combined proposals are encouraged to be separable into the different thrusts.

Is it practical for a university without secret facilities to participate in this program?

The Government welcomes any class of performer who has innovative algorithms or software that is relevant to this problem set. As specified in the BAA, it is expected that a significant amount of the work will be performed at the collateral SECRET level.

Does the software have to be in C or C++ or can it be delivered in Matlab at the end of Phase 1? Should the source code be part of the software delivery?

Software does not have to be delivered in C or C++ - Matlab is acceptable. Each TA2 developer will work with SIMAF to define the integration requirements for their software. Source code developed on a Government program is always a deliverable.

Will a software development kit (SDK), test kit or test environment to be provided or desired?

No. This is not required for Phase 1.

TA2 performers are required to integrate and test within a Government simulation environment. What is the expectation regarding TA2 integratabililty into this environment? Should we allocate substantial resources to this?

DARPA anticipates a simple I/O based interface with your single component or sub-component and the simulation. DARPA intends to be flexible and work with each performer individually.

Will TA2 developers be part of Phase 2?

Yes. DARPA expects TA2 technologies will require further development before they are ready for integration with real systems.

Does DARPA expect the TA2 performers to collectively develop algorithmic technology for most DBM requirements and for TA1 performers to largely use that technology in Phase 2, or does DARPA expect the TA2 performers to collectively develop algorithmic technology for a limited subset of DBM requirements and for the TA1 performers to use only some portion of that subset in Phase 2?

Requirements are defined in the BAA at a relatively high level. Detailed requirements will be developed by TA1 performers during Phase 1, partially based on TA2 development. It is envisioned that a subset of the Phase 1 TA2 technologies will be selected for Phase 2. It is also possible that technology development gaps will be identified in Phase 1 which will require investment in Phase 2.

How soon do you expect software from TA2 to be available for integration in the simulation environment? With experimentation within 6 months after contract award, does this assume already developed software/algorithms or nearly developed?

DARPA expects software to be available for integration at three to six months after contract award – approximately three months after award for a simple integration test and six months after award for the first functional test. The DBM program is not focused on basic research, but is a technology development program. We expect there will be significant leverage of existing algorithms and software.

Is the control of communications (when to communicate, what to communicate, and to whom) within the scope of a Distributed Situation Understanding (DSU) solution or is that encompassed by Adaptive Planning and Control? Is information routing within the scope of DSU?

While proposals may offer alternative decompositions, one potential view is that control of communications is part of DSU in the context of deciding when to communicate SU information and in APC in the context of communicating coordination/plan information.

If Adaptive Planning and Control (APC) solutions will be capable of dynamic re-planning, what assumptions should be made by DSU about the availability of plan information?

That will be determined during Phase 1, but at a minimum, local plan information will be available. Local plan information could be simply the flight and sensor plan for a single UAS to the plans for multiple UAS under the control of a manned aircraft to the plans for a flight of manned aircraft under the control of an airborne battle manager.

For the Human Machine Interaction (HMI) portion, will user meetings and interviews occur in the Washington DC area? Which HMI experts will be made available as to algorithm developers (similar to the Government providing access to pilots/operators)? Will the Government provide existing analyses of human task workload, task processes and performance for these platforms?

The meetings and interviews will not necessarily be in the Washington, DC area. HMI developers will have the same access to the pilots and operators as the other performers. If there is a specific human task workload analysis required, it may be requested as GFI.

With regard to HMI, what is the definition of "integrate with existing battle management systems and fighter glass cockpit displays"? Does this imply software integration (code software for SIMAF data sources/systems) or concept integration (ensure design conceptually "fit" with existing systems, data & capabilities)?

For Phase 1, the HMI should conceptually integrate into existing battle management systems. HMI software developed in Phase 1 will be integrated with glass cockpit displays at SIMAF. The actual software interface definition is flexible for Phase 1, though, and may not be representative of an existing battle management system.

What is the context of including the SIMAF briefing? Are they an encouraged resource for program performance? Will their philosophy/approach figure significantly in proposal evaluation? Will they be intimately involved in monitoring technical progress?

SIMAF is the Government agency selected to provide the modeling and simulation capability for performance evaluation of DBM components. The SIMAF philosophy/approach is not part of the proposal evaluation and SIMAF personnel will not be monitoring technical progress.

What will SIMAF actually provide and will they be ready to go at program start?

It is expected that SIMAF will provide the software testing environment during Phase 1. SIMAF will provide a way to interface performer software into SIMAF's simulations, which will include models of command and control networks, aircraft, sensors, weapons effects, threats, etc. SIMAF will provide a basic interface document with proposed interfaces and operational scenarios at the kick-off meeting and will be ready to start interface activities by 3 months after contract award. Specifics of the interfaces will be developed independently with each performer. It is expected that some documentation of sensor performance characteristics and an API will be provided, though it is not envisioned that models will be provided as GFI/E. TA2 performers will be given access to SIMAF personnel after the kick-off meeting.

Our understanding is that SIMAF has three support contractors to conduct test and measurement. Is the support of this BAA provided at SIMAF by these companies considered independent of the BAA, or if building a comprehensive team should include one of them to bid with the team?

The SIMAF support is considered independent of the BAA and does not need to be included in your proposal.